Stachys palustris L. Found growing near the edge of a field in moist soil, by Mr. Billings, July 7, 1901.

Scutellaria churchilliana Fernald. Wet ground along the Penobscot River below the waterworks in 1904. Also found along river in town of Veazie in 1905.

Scrophularia leporella Bicknell. Observed along the water front in Bangor the past three years, and found in Brewer by Mr. Billings in 1905.

Crepis virens agrestis Koch. Many plants growing on a wharf below "High Head," July 16, 1904. Thinking it merely a form of the common fall dandelion we took only a few specimens.

Bangor, Maine.

THE VARIATIONS OF CAREX PAUPERCULA.

M. L. Fernald.

In 1803 Michaux described from Lake Mistassini at the head of Rupert River a small *Carex* which, from its tiny few-flowered spikes, he named *C. paupercula*.[1] By subsequent authors the Michaux plant has been treated without question as a depauperate phase of the polar *C. irrigua* of J. E. Smith[2] (1826) which was based upon *C. limosa*, var. *irrigua* originally published by Wahlenberg[3] in 1803 from Scandinavia; while by many recent authors both *C. paupercula* and *C. irrigua* have been treated as identical with the antipodal *C. magellanica*, described by Lamarck[4] in 1789 from the Straits of Magellan.

A recent study of these three plants has convinced the writer that in our ordinary interpretation of them we have drifted far from the original conceptions of Lamarck, Michaux, and Wahlenberg; and that in order to emphasize certain points which have been too generally ignored it is necessary to review the characteristics of the plants. Since the boreal plant described as *Carex irrigua* is of the broadest distribution and consequently the best known of the three it may appropriately receive the first consideration.

As already stated *Carex irrigua* has by many students been regarded

[1] Michx. Fl. ii. 172 (1803).
[2] Smith in Hoppe, Caric. Germ. 72 (1826).
[3] Wahl., Act. Holm. (1803) 162.
[4] Lam. Encyc. iii. 385 (1789).

as identical with *C. magellanica*. This identity, as interpreted by Francis Boott, was not absolute for, while in 1847 he had regarded the plants as specifically distinct,[1] he subsequently treated them as varieties of one species. In doing so, however, he reversed in a manner which would nowadays be considered quite irregular the nomenclatorial status of the plants, offering the following explanation:—"I have adopted the name of Lamarck [*magellanica*], as I cannot see any specific distinction between the Fuegian and the European and [North] American plant; but I have described the last as the typical form, as most generally known, giving a figure of the first as a var. β."[2]

Subsequent authors have varied in their interpretation of the two plants, but those who have followed Francis Boott in regarding them as specifically inseparable have generally failed to indicate that there is even a varietal difference between the two. Others, however, have regarded the boreal *Carex irrigua* as specifically distinct from *C. magellanica*; and an examination of specimens collected by Dr. R. O. Cunningham in January, 1869, at Port Famine, and of the descriptions and plates of Schkuhr, Boott, and others, indicates that this is the wiser course.

In the first place, *Carex magellanica* has androgynous spikes. All descriptions from Lamarck's original[3] in 1789 to Macloskie's[4] in 1904 agree upon this, and in the plates of Schkuhr[5] and the Flora Antarctica[6] the plant is thus represented, though in Boott's Illustrations[7] one of the five specimens drawn is shown with the terminal spike wholly staminate; and Boott states upon the authority of Spach that, of the 26 specimens in the Herbarium of the Muséum d'Histoire Naturelle at Paris 2 have the terminal spike staminate and 24 have it staminate only at base. Of the boreal *C. irrigua* which has recently passed as *C. magellanica* I have examined 633 inflorescences of which 600 have the terminal spike strictly staminate and only 33 have it more or less androgynous. These figures, then, show very clearly opposite tendencies of the two plants.

Furthermore, the much larger scales of *Carex magellanica* are nearly or quite as broad as the perigynia. In *C. irrigua*, on the other hand, the shorter narrower scales so fail to cover the perigynia that even in

[1] Boott in Hook. Fl. Antarct. 365 (1847).
[2] Boott, Ill. ii. 80 (1860).
[3] Lam. Encyc. iii. 385 (1789).
[4] Macloskie, Fl. Pat. 284 (1904).
[5] Schkuhr, Riedgr. 52, t. N., fig. 51 (1801).
[6] Hook. Fl. Antarct. t. 143. (1847).
[7] Boott. Ill. ii. t. 220 (1860).

comparatively young plants those whitish organs extend conspicuously each side of the narrow scales.

One other character which, from the material at hand, seems to separate the Fuegian and Patagonian plant from its boreal ally is in the leaf-sheath. In *C. magellanica* the pale nerveless band which extends down the sheath from the auricle is rather firm, opaque, and strongly dark-dotted. In *C. irrigua* it is thin and membranous, translucent, and faintly or obscurely dotted.

In view of these well marked characters of the plants it seems that the true *Carex magellanica* of the Patagonian and Fuegian region is a species quite as distinct from the extreme boreal *C. irrigua* as are its other allies, *C. laxa*, *C. limosa*, and *C. rariflora*. The boreal plant, *C. irrigua*, however, presents in North America three well marked variations which it is the final purpose of this paper to discuss. This fact, that not all the North American specimens are identical with those of polar and alpine Europe, was noticed as early as 1841 by Drejer who said: "Specimina americana majora et vegetiora sunt, quum ulla europaea, quae vidi"[1]; and this statement was seconded by Francis Boott[2] who added that the culm of the North American plant is frequently scabrous, but who, nevertheless, preferred to regard this taller often scabrous North American plant as the "typical" *C. magellanica* because it was "most generally known."

A study of the abundant material of *Carex irrigua* in the Gray Herbarium and the Herbarium of the New England Botanical Club shows that in the colder parts of Canada and the Eastern States the common phase of the plant is quite like the European in its comparatively low stature, castaneous scales, and ordinarily glabrous culms. Southward and in the Great Lake region, however, the common form differs in the characters mentioned by Drejer and by Boott; and with its tendency to greater stature and often scabrous culms it shows less color in the scales, these having green central portions and pale brown to straw-colored margins. In none of these points is the plant thoroughly constant, but as a fairly marked American variety it seems advisable to separate it from the true *C. irrigua* which in Europe rarely if ever tends to such an extreme.

Another tendency of the species is the plant which was discovered by Michaux at Lake Mistassini and which abounds in alpine bogs of

[1] Drejer, Revis. 51 (1841). [2] Boott, Ill. ii. 80 (1860).

the Shickshock Mountains, in Gaspé Peninsula. It is quite like the typical *Carex irrigua* except for its smaller stature and its tiny few-flowered spikes. This plant was described by Michaux as a distinct species, and a beautiful pencil-sketch in the Gray Herbarium, with detailed drawings by Decaisne, of an original Michaux specimen, leaves no question of the identity of the Shickshock plant. This dwarf alpine or subalpine extreme has the dark scales and the glabrous culms of typical *C. irrigua*, so that there is no doubt of its true affinity. So far as known to the writer this few-flowered plant is confined to the colder parts of eastern Canada; but since it was described as a species by Michaux in 1803, long before the wider-distributed *C. irrigua* was given specific recognition in 1826, we are obliged, by the rulings of the recent International Congress at Vienna, to retain for the species the name given it by Michaux.

The characteristics and nomenclature, then, of the three phases of *Carex paupercula* may be summarized as follows.

Carex paupercula Michx. Culms 1–2.5 dm. high, glabrous: pistillate spikes few-flowered, ovoid, 4–8 mm. long: scales castaneous throughout. — Fl. ii. 172 (1803). — Quebec, Lake Mistassini (*Michaux*); alpine bogs, Mt. Albert, Gaspé Co., August 12, 1905 (*Collins & Fernald*, no. 48).

Var. **irrigua** (Wahbenberg) comb. nov. Plant 1–4.5 (very rarely becoming 5–8) dm. high; the culm usually glabrous: pistillate spikes cylindric, in maturity 1–1.6 cm. long: scales castaneous throughout.— *C. limosa*, β, *irrigua* Wahl. Act. Holm. (1803) 162; Dewey, Sill. Jour. x. 42 (1826); Torr. Ann. Lyc. Nat. Hist. N. Y. iii. 425 (1836). *C. limosa* γ, *irrigata* Wahl. Fl. Lapp. 243, t. 15, fig. 2 (1812). *C. lenticularis* Dewey, Sill. Jour. vii. 273 (1824), not Michx. *C. irrigua* Smith in Hoppe, Caric. Germ. 72 (1826); Hoppe & Sturm, Caric. Germ. t. 38 (1829); Reich. Ic. Fl. Germ. viii. 17, t. 238, fig. 594 (1846); Carey in Gray, Man. 549 (1848); Anders. Cyp. Scand. 36, t. 7, fig. 72 (1849); Liebm. & Lange, Fl. Dan. Suppl. 13, t. 106 (1865). *C. magellanica* Boott, Ill. ii. 80, t. 219, 220 (1860); Dewey, Am. Jour. Sci. xxxix. ser. 2, 70 (1865); Bailey, Proc. Am. Acad. xxii. 94 (1887) and in Gray, Man. ed. 6, 602 (1890); Britton in Britton & Brown, Ill. Fl. i. 313 (1896), in part; not Lam.— Boreal and alpine regions of Europe. In America from the subarctic regions south in cold bogs and on mountains to Nova Scotia, northern Worcester Co., Massachusetts, Pocono Mt., Pennsylvania, Pic River, Ontario, and

UTAH. Most abundant from the Gulf of St. Lawrence to the White Mountains.

Var. **pallens** var. nov. Planta 3–8 dm. alta, culmis saepe scabris; spicis cylindricis 1–1.8 cm. longis, squamis viridibus margine fulvis vel flavescentibus.— NOVA SCOTIA, peat bogs, North Sydney, July 11, 1883 (*J. Macoun*): MAINE, Arbor Vitae swamps, Presque Isle, July 12, 1902 (*Williams, Collins, & Fernald*); Arbor Vitae swamp, Blaine (*Fernald*, no. 2038); bog, Crystal, June 24, 1898 (*Fernald*, no. 2036); sphagnous swamp, Sangerville, July 1, 1895 (*Fernald*, no. 254); Cedar swamp, Buckfield, July 1, 1878 (*J. A. Allen*, no. 21a.): NEW HAMPSHIRE, Tuckerman's Ravine, July 11, 1895 (*J. R. Churchill*); Crawford Path, Mt. Clinton, July 18, 1895 (*E. & C. E. Faxon*): VERMONT, Burlington, June 15, 1896 (*A. J. Grout*); Cedar swamp, Fair Haven, June 27, 1899 (*W. W. Eggleston*): MASSACHUSETTS, Washington, Berkshire Co., July 5, 1859 (*W. Boott*): CONNECTICUT, sphagnous swamp, Norfolk, June 14, 1904 (*C. H. Bissell*): NEW YORK, Big Square Pond, Adirondack Mts., July 2, 1899 (*Rowlee, Wiegand, & Hastings*); Big Swamp, Oriskany (*Knieskern*): MICHIGAN, Washington (*D. Cooley*); deep swamp, Lansing, July 5, 1886 (*L. H. Bailey*, no. 101), June 24, 1892 (*C. A. Davis*); Howell Junction, June 10, 1890 (*C. F. Wheeler*): MINNESOTA, Minneapolis, July, 1886 (*H. M. Simmons*): BRITISH COLUMBIA, head of Deadman's River, June 21, 1889 (*J. M. Macoun*).

GRAY HERBARIUM.

INTUITION AS A SUBSTITUTE FOR REFERENCE.

FRANK SHIPLEY COLLINS.

WHEN a new genus is proposed, it is usual for the author to indicate the derivation of the new name; and in manuals, floras, etc., these derivations are often given for all the genera. Some authors, however, have neglected to give any explanation of their new names, so that only more or less successful guesses can be made in subsequent works. But when the later writer depends, as a rule, on his intuitions, a comparison with the original description may show a curious difference, as seen in the two cases following.

Among the few algae mentioned in Provancher, Flore Canadienne,